

Operating instructions

Flat and curved conveyor AM-F / AM-C



Dok-ID: 02021

Read the operating instructions before starting work!

© GEPPERT-Band GmbH

Karl-Heinz-Beckurts-Str. 7
D-52428 Jülich

Tel.: +49 (0) 2461-93767-0
Fax: +49 (0) 2461-93767-30

E-Mail: info@GEPPERT-Band.de
Internet: www.geppert-band.de

Release:

Created by:
Kothes!
Technische Kommunikation GmbH & Co. KG
www.kothes.de

1	General	5
1.1	Information about the operating instructions	5
1.2	Explanation of symbols	6
1.3	Limitation of liability	8
1.4	Dismantling and disposal	8
1.5	Copyright	9
1.6	Warranty conditions	9
1.7	Customer Service	9
1.8	Manufacturer's declaration / Declaration of conformity	9
2	Safety	10
2.1	Customer's responsibility	10
2.2	Operating personnel	12
2.2.1	Qualifications	12
2.2.2	Unauthorized persons	13
2.2.3	Training	13
2.3	Use for intended purpose	14
2.4	Personal protective gear	15
2.5	Special dangers	16
2.6	Safety devices	18
2.7	Securing against switching on	19
2.8	Labelling	20
3	Technical data	21
3.1	General information	21
3.2	Conveyor belt dimensions	21
3.3	Conveyor speeds	21
3.4	Connection values	22
3.5	Operating conditions	22
3.6	Type plate	22
3.7	Dimension Diagram	23
4	Structure and function	24
4.1	Overview	24

Content

4.2	Brief description	25
4.3	Description of assemblies	25
4.3.1	Drive unit.....	25
4.3.2	Electrical components	26
5	Transport, packing and storage	28
5.1	Safety notes for transport.....	28
5.2	Transport inspection.....	29
5.3	Packing	30
5.4	Transport.....	30
6	Installation and commissioning	32
6.1	Safety	32
6.2	Installation	34
6.2.1	Installation.....	34
6.2.2	Connection.....	44
6.3	Commissioning.....	46
7	Operation	47
7.1	Shut-down in events of emergency.....	49
8	Maintenance.....	50
8.1	Safety	50
8.2	Trouble shooting chart	52
8.3	Startup after eliminating fault	52
8.4	Servicing	52
9	Replacement Part List.....	53
10	Appendix	55
10.1	Drive motors.....	55
10.1.1	Type SN3F.....	55
10.1.2	Type SN8F.....	56
10.1.3	Type SN9F.....	57
11	Index	58

1 General

1.1 Information about the operating instructions

These operating instructions provide important information on how to work with the device. Strict compliance with all specified safety notes and instructions is a prerequisite for safety at work.

Moreover, the accident prevention instructions and general safety regulations applicable at the place of use must also be complied with.

Read these operating instructions thoroughly before starting any work! They are part of the product, must always be kept near the device and should be available for the personnel at any time.

When passing the device over to a third party, the operating instructions must also be handed over.

For better representation of circumstances the illustrations used are not necessarily to scale and may slightly vary from the actual design of the device.

The enclosed operating instructions for the installed components apply alongside these operating instructions. Strictly observe the notes contained therein – especially the safety notes!

Content

1.2 Explanation of symbols

Warnings

In these operating instructions warnings are identified by symbols. These warnings are introduced by signal words, which express the severity of a danger.

Adhere to these warnings and act cautiously in order to avoid accidents, personal injuries and damage to property.

**DANGER!**

... indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

**WARNING!**

... indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

**CAUTION!**

... indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

**CAUTION!**

... indicates a potentially hazardous situation which, if not avoided, may result in property damage.

Hints and recommendations

**NOTE!**

... emphasizes useful hints and recommendations as well as information for efficient and trouble-free operation.

Special safety notes

The following symbols are used in connection with the safety notes to highlight particular dangers:



DANGER!

Danger to life caused by electric current!

... highlights life threatening situations caused by electric current. There is a danger of serious injury or death if the safety notes are not complied with. The work to be performed must only be carried out by qualified electricians.



DANGER!

Danger of crushing and trapping from moving chains and rotating axles!

... indicates dangerous situations due to moving chains and rotating axles. If the safety instructions are not followed, there is a danger of slight to serious injuries.

Content

1.3 Limitation of liability

All information and notes in this manual were compiled under due consideration of valid standards and regulations, the present status of technology and our years of knowledge and experience.

The manufacturer can not be made liable for damage resulting from:

- disregarding these instructions
- unintended use
- employment of untrained personnel
- unauthorized conversions
- technical modifications
- use of unapproved spare parts

In case of customised versions the actual scope of delivery can vary from the explanations and representations in these instructions, because of the utilization of additional options or due to latest technical changes.

Apart from this, the obligations agreed upon in the delivery contract, the General Terms of Business and the delivery conditions of the manufacturer and the legal regulations valid at the time of contract do apply.

We reserve the right to make technical modifications in order to improve usability.

1.4 Dismantling and disposal

If no return or disposal agreement was made, dismantle the equipment properly following the safety instructions in these operating instructions, and dispose of it environmentally correctly.

Before dismantling:

- Switch off the power supply and secure against reconnection. Then physically separate the supply cables, and discharge stored residual energy.
- Remove and dispose environmentally correctly of operating and auxiliary materials as well as residual production materials.

On disposal

Send dismantled components for recycling.

- Send residual metal components for scrap.
- Give plastic parts in for recycling.
- Dispose of other components according to their material properties.

1.5 Copyright

Treat the operating instructions confidentially. They are only intended for persons working with or on the device. Passing these operating instructions on to third parties without the written consent of the manufacturer is not permitted.



NOTE!

The contents of these instructions, texts, drawings, pictures and other representations are protected by copyright law subject to industrial property rights. Any misuse is punishable.

Reproduction of any kind – even in form of excerpts – as well as the use and/or disclosure of the contents without the written consent of the manufacturer is not permitted. Violations oblige to compensation. The right for further claims remains reserved.

1.6 Warranty conditions

The warranty conditions are attached to the sales documents as a separate document.

1.7 Customer Service

Our Customer Service is always available for technical information.

Notes on the responsible contact partner are on call by phone, fax, e-mail or via internet, see address of manufacturer on page 2.

Apart from that, our members of staff are permanently interested in receiving new information and experience resulting from the use of our products and which could be of great value for future improvements.

1.8 Manufacturer's declaration / Declaration of conformity

If the equipment has not been provided ready to connect, the manufacturer's declaration is present as a separate document.

If the equipment has been provided ready to connect, the declaration of conformity is present as a separate document.

2 Safety

This paragraph provides you with an overview of all important safety aspects for optimal protection of personnel as well as safe and trouble-free operation.

Disregarding the operating instructions and safety regulations specified in this manual may result in considerable danger.

2.1 Customer's responsibility

The device is used for commercial purposes. The company operating the device is thus subject to the legal obligations concerning industrial safety.

The safety, accident prevention and environmental protection regulations applicable for the area of application of the device must be complied with, alongside the safety notes specified in these operating instructions. The customer must, in particular:

- keep himself informed about the valid industrial safety regulations.
- determine other dangers that result from special working conditions at the place of use in form of a risk analysis.
- include the necessary behaviour requirements for operation of the device at the place of use into operating instructions.
- check the device over the entire period of use, to make sure that the operating instructions drawn up by him always conform with the latest technical standards.
- match the operating instructions to latest regulations, standards and work conditions - if this should become necessary.
- unambiguously assign responsibilities for installation, operation, maintenance and cleaning of the device
- make sure that all members of staff, who work on or with the device, have read and understood these operating instructions. Apart from this, the customer must train and inform his personnel about work on and with the device and potential dangers at regular intervals.

Moreover, the customer is responsible for

- maintaining the device in technically mint condition.
- adhering to the specified maintenance intervals.

- checking all safety features at regular intervals for completeness and function.

Content

2.2 Operating personnel

2.2.1 Qualifications



WARNING!

Danger of injury if insufficiently qualified!

Improper operation can lead to serious personal injuries or property damage.

Therefore:

- Have all activities performed only by qualified personnel.

The following qualifications are specified for different areas of activity listed in the operating instructions.

- **An instructed person**
has been instructed by the customer in an orientation session on the assigned tasks and possible dangers in case of improper behavior.
- **Qualified personnel**
based on their professional training, know-how and experience as well as knowledge of the applicable standards and regulations is able to perform assigned work activities and to detect and avoid possible dangers on their own.
- **A professional electrician**
based on his/her professional training, know-how and experience as well as knowledge of the applicable standards and regulations is able to perform work on electrical systems and to detect and avoid possible dangers on his/her own.
The professional electrician has been trained for the special location where he/she works and knows the relevant standards and regulations.

Only persons of whom it may be expected that they perform their work reliably are permitted as personnel. Persons whose reaction capability is impaired, e.g. through drugs, alcohol or medication are not permitted.

- When selecting the personnel, the stipulations regarding age and occupation applying at the location must be observed.

2.2.2 Unauthorized persons



WARNING! Danger for unauthorized persons!

Unauthorized persons not meeting the requirements outlined here are not aware of the dangers in the work area.

Therefore:

- Keep unauthorized persons away from the work area.
- If in doubt, address the persons and direct them to leave the work area.
- Interrupt work activities as long as unauthorized persons are present in the work area.

2.2.3 Training

Personnel must be trained by the operator on a regular basis. For record-keeping purposes, a log of training conducted must be kept.

Date	Name	Type of training	Training conducted by	Signature
------	------	------------------	-----------------------	-----------

Fig. 1: Sample training log (master copy)

Content

2.3 Use for intended purpose

The equipment is designed and constructed exclusively for the purpose of use described here.

The equipment is used exclusively for the transport of piece goods and packages for internal use within operating areas not prone to explosion.



WARNING!

Danger if used other than for intended purpose!

Any use other than for the intended purpose and/or other type of use of the equipment can lead to dangerous circumstances.

Therefore:

- Use the equipment only for its intended purpose.
- Strictly follow all directions in these instructions for use.
- In particular, do not do any of the following:
They count as use not for intended purpose:
 - Transport of bulk materials.
 - Transport of piece goods whose weight exceeds the maximum weight given in the technical data.
 - Transport or carriage of people or animals.
 - Use in explosion-prone areas.

Claims of any type for damages resulting from use other than for intended purpose are excluded.

The operator alone is responsible for all damages resulting from use other than for intended purpose.

2.4 Personal protective gear

Wearing of personal protective gear is required when working to minimize the health hazards.

- Always wear the protective gear that is necessary for the respective task when working.
- Follow the instructions on personal protective gear that are posted in the work area.

Wear generally

Generally wear for all kind of work:



Protective clothing

are tight fitting working clothes with low tear resistance, with light sleeves and without any sticking out parts. These clothes are mainly a protection against being caught by moving machine parts.

Do not wear rings, chains, necklaces and other jewellery.



Safety boots

to protect against heavy parts falling down or slipping on slippery ground.



Protective gloves

to protect the hand against friction, graze, punctures or deep cuts as well as contact with hot surfaces.

Wear personal protective gear for special tasks

When performing special tasks it is necessary to wear personal protective gear. This personal protective gear will be separately specified in the chapters of this manual. This special protective gear is explained below.



Hairnet

to protect long hair from being caught, wrapped up in, or drawn into moving parts.

Content

2.5 Special dangers

The following section lists the residual risks that have been determined by the risk analysis.

- Heed the safety instructions listed here, and the warning instructions in subsequent chapters of this guide, to reduce health hazards and to avoid dangerous situations.

Electric Current



DANGER!

Danger to life caused by electric current!

Touching conductive parts causes a direct danger to life. Damage to insulations or individual components can cause danger to life.

Therefore:

- In the event of damage to insulation switch off the power supply immediately and have the defective parts repaired.
- Work on the electric system must be carried out only by skilled electricians.
- De-energize the machine for all work on the electrical system.
- Before maintenance, cleaning or repair work, switch off the power supply and secure it against being switched on again.
- Do not bridge fuses or make them ineffective. When changing fuses make sure you use the correct amperage.
- Keep moisture away from conductive parts. This can cause short circuit.

Transported material



ATTENTION!

Danger of injury from transported material!

Transported material on the conveyor belt can cause injuries.

Therefore:

- Ensure that material is loaded correctly on the conveyor belt.
- Choose sufficient separation between the transported materials to prevent the danger of being crushed.
- Position the transported material on the conveyor belt in such a way that it cannot fall off during transport.
- Ensure that there is suitable guiding equipment at the end of the conveyor belt (e.g. edge protection straps, funnel trap).
- Wear personal protective equipment in the working area.

Conveyor belt and return rollers



WARNING!

Danger of crushing and trapping from moving conveyor belt and rotating return rollers.

A moving conveyor belt and rotating return rollers can draw in parts of clothing and long hair, or trap body parts and cause light to heavy injuries.

Therefore:

- Do not reach into moving conveyor belts.
- Do not reach into rotating return rollers.
- Do not reach into gaps between conveyor belts, frames, and other parts of the equipment.
- Observe the warning symbols in the working area.
- Carry out work on the equipment only when it is stopped.
- Wear personal protective equipment in the working area.

Content

2.6 Safety devices



WARNING!

Malfunctioning safety devices may pose a fatal risk!

Safety devices must be intact in order to guarantee safety.

Therefore:

- Before starting work, check that the safety devices are fully functional and correctly installed.
- Never disable safety devices.
- Take care to ensure that safety devices such as emergency stops, emergency trip wires etc. are always accessible.



NOTE!

See the "Structure and function" chapter for further information on the location of safety devices.

Integration into an emergency stop concept is required

If the equipment is not delivered ready to connect, or it is destined for use as part of a system, it has no control of its own and no autonomous emergency stop function.

Before the equipment is commissioned, install emergency stop equipment and integrate it into the safety function of the equipment control system.

Connect the emergency stop equipment in such a way that if the power supply is interrupted, or the power supply is activated after an interruption, dangerous situations for humans or materials cannot arise.

The emergency stop equipment must be easily accessible at all times.

2.7 Securing against switching on



DANGER!

Danger to life caused by uncontrolled reconnection of electrical power supply!

There is a risk of the electric power supply being switched on again when working in a danger zone. This creates danger to the life of persons in the danger zone.

Therefore:

- Follow the instructions for securing the equipment against switching on in the sections of these operating instructions.
- To secure against switching on again follow the sequence described below.

Switch secured with padlock

on: at o'clock

DO NOT SWITCH ON

The padlock must be removed only

by:

after it has been ensured that no persons
are inside the danger zone.

Securing against switching on:

1. Switch off the electric power supply.
2. If possible secure the switch with a padlock and attach a clearly visible warning label to the switch, as shown in Fig. 2.
3. Have the key stored with the staff member nominated on the label.

Fig. 2

Switched off

on: at o'clock

DO NOT SWITCH ON

The equipment may be switched on only

by:

after it has been ensured that no persons
are inside the danger zone.

4. If a switch cannot be secured with a padlock, stand up a sign as shown in Fig. 3.
5. After all work has been completed, make sure that there are no persons in the danger zone.
6. Make sure that all protective device are correctly in place and fully functional.
7. Remove the sign only if this has been confirmed.

Fig. 3

Content

2.8 Labelling

Depending on the working conditions in the area of operation, the following symbols and signs are applied to the equipment. They apply to the immediate neighbourhood in which they are displayed.



WARNING!

Danger of injury if symbols are illegible!

With the passage of time, labels and signs can become dirty or otherwise illegible.

Therefore:

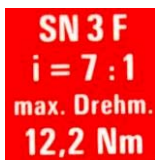
- Keep all safety, warning, and operational notices easily legible at all times.
- Replace damaged signs or labels immediately.



In areas of manual operations



In areas where there are electrical connections



On the gear drive

(max. Drehm. = maximal torque)

3 Technical data



ATTENTION!

Every conveyor system is individually adapted to its conditions of use in terms of its dimensions, conveyor speed, and weight of goods conveyed. The following details should therefore be seen as standard values.

3.1 General information

Value	AM-F / AM-C
Weight [kg]	30...250
Maximum weight to be conveyed [kg]	50
Length of conveyor belt [m]	0,5...6
Angle [°] (only AM-C)	15 to 180

3.2 Conveyor belt dimensions

Conveyor belt width [mm]	152	305	457	610
Inner radius in relation to belt width [mm] (only AM-C)	350	700	1050	1400

3.3 Conveyor speeds

Equipment with constant conveyor speed [m/min]	6,5	12,1	18,3	24,4	36,6	52,3
Equipment with variable conveyor speed [m/min]	2,6...9,5	4,9...17,8	7,3...26,7	9,8...35,6	14,7...53,4	21...76,3

Content

3.4 Connection values

Value	Motor types		
	SN3F	SN8F	SN9F
Voltage [V] at 50 Hz	380	380	380
Current requirement [A]	0,7	1,6	1,2
Power requirement [W]	180	550	370

For further details of motor data please refer to the appendix.

3.5 Operating conditions

Environment	Value	AM-F / AM-C
	Temperature range [°C]	-10...60
	Relative humidity, maximum [%]	95
Duration	Value	AM-F / AM-C
	Maximum period of continuous operation	Suitable for permanent operation

3.6 Type plate



Fig. 4: Manufacturer's plate

The manufacturer's plate is located on the drive unit and contains the following details:

- 1 Maker
- 2 Year of construction
- 3 No. of phases
- 4 Supply voltage and frequency
- 5 Manufacturing number
- 6 Type

3.7 Dimension Diagram

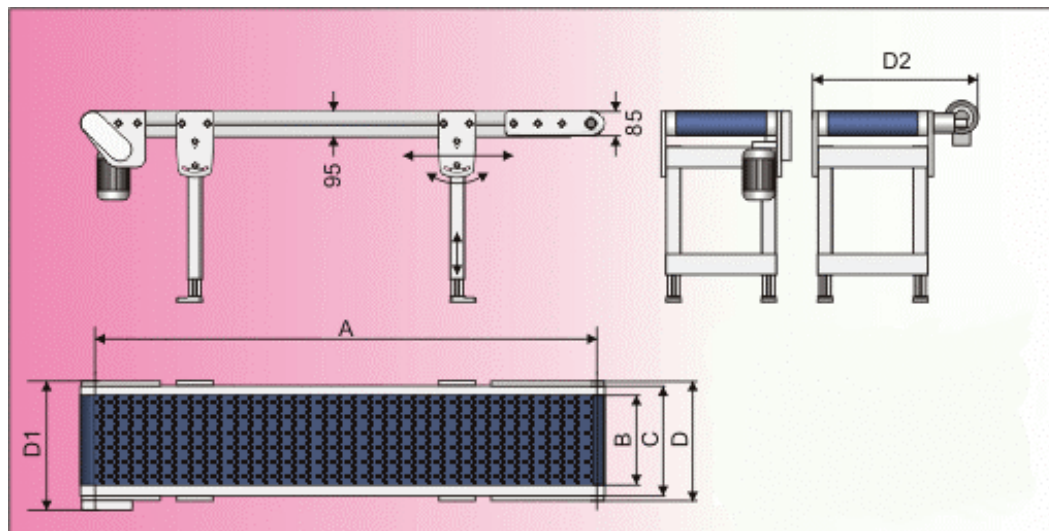


Fig. 5: Dimension sheet AM-F

- | | |
|---------------------------|-------------------------|
| A: Distance between axles | D: Belt width + 44 mm |
| B: Belt width | D1: Belt width + 99 mm |
| C: Belt width + 18 mm | D2: Belt width + 274 mm |

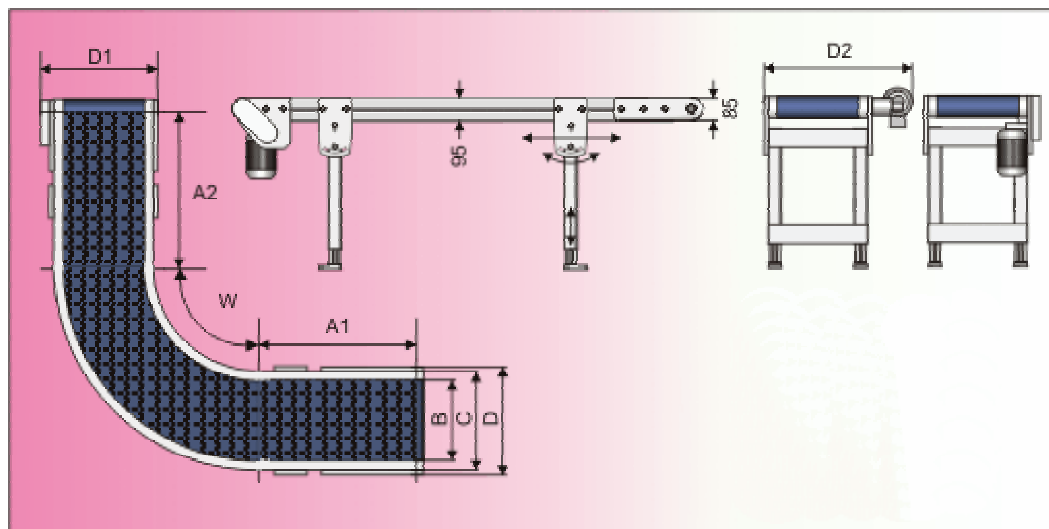


Fig. 6 dimension sheet AM-C

- | | |
|---|-------------------------|
| A1: Distance between axles before curve | C: Belt width + 18 mm |
| A2: Distance between axles after curve | D: Belt width + 44 mm |
| W: Angle | D1: Belt width + 99 mm |
| B: Belt width | D2: Belt width + 274 mm |

Content

4 Structure and function

4.1 Overview

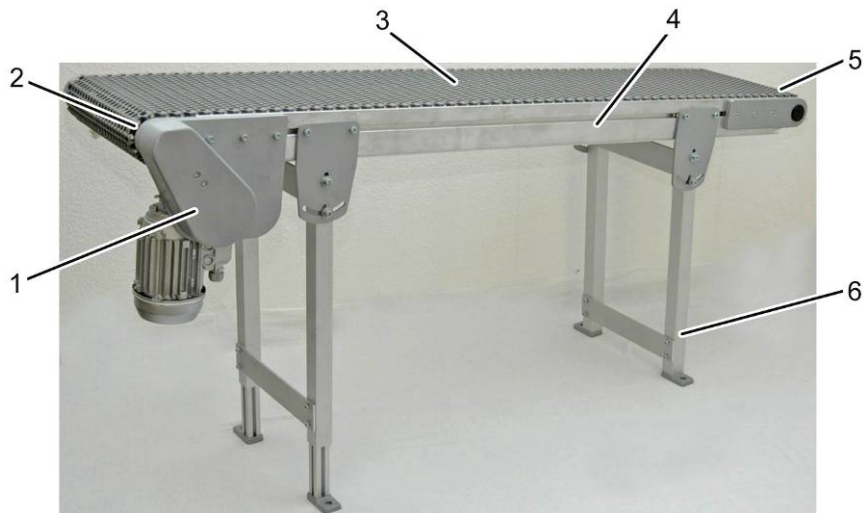


Fig. 7: Flat conveyor AM-F

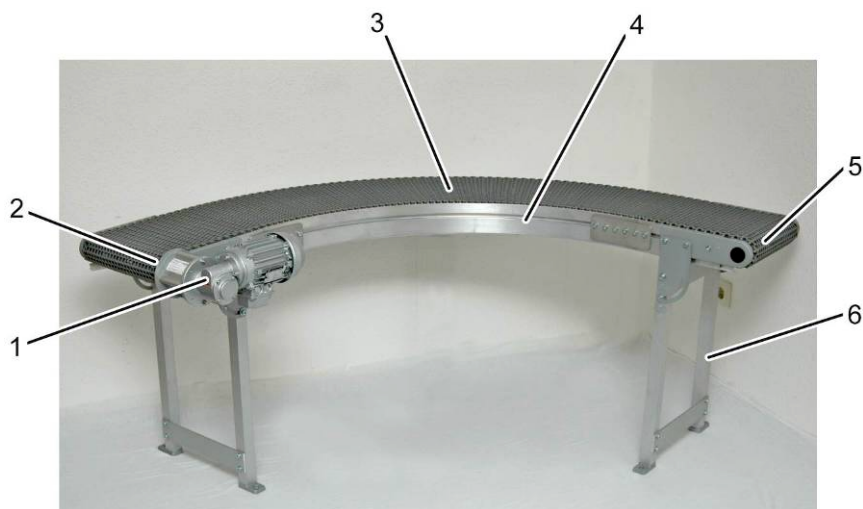


Fig. 8: Curved conveyor AM-C

- | | | | |
|---|---------------|---|-------------|
| 1 | Drive unit | 4 | Frame |
| 2 | Drive axle | 5 | Return axle |
| 3 | Conveyor belt | 6 | Stand |

Furthermore, electrical control components form part of the equipment fitted on the equipment according to the customer's wishes.

4.2 Brief description

The electric motor powers the drive axle via a clutch (sideways drive) or a chain (drive from below).

Cogwheels are fitted to the drive axle.

The cogwheels engage with a plastic module belt which is returned by a return axle, and which forms an endless belt.

4.3 Description of assemblies

4.3.1 Drive unit



Fig. 9: Drive unit below

When the motor is fitted below the conveyor belt, the transfer of power to the drive axle is made by a drive chain.

The drive chain is located behind a protective housing (chain box).



Fig. 10: Drive unit to the side

When the motor is fitted next to the conveyor belt, the transfer of power to the drive axle is made by a clutch.

The clutch is located in a clutch housing between the motor and the drive axle.

It consists of two cogwheels which are connected via the clutch sleeve.

Content

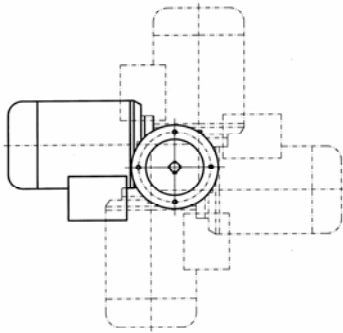


Fig. 11: Installation options for sideways drive

When fitting the motor sideways next to the conveyor belt, the motor can be flange mounted in steps of 90°.

4.3.2 Electrical components



Fig. 12: Motor protection switch

Conveyor systems which are ready to connect and which have a constant conveyor speed are equipped with a motor protection switch.

Conveyor systems which are not ready to connect must be fitted with suitable motor protection by the operator.

Every motor protection switch has the function of protecting the motor from overload. This means that damage to the motor is impossible if the conveyor belt is blocked for mechanical reasons. In this case the converter switches the power off.

The motor protection switch is equipped with an emergency stop switch which allows the conveyor belt to be stopped quickly.

The protection switch has a restart lock if the voltage falls, i.e. if the power is cut off and reconnected, the conveyor belt will not start on its own. A separate start button must be pressed.

The motor protection switch should be connected to a 380 V / 3~ / 50 Hz supply.



Fig. 13: Emergency stop switch

All conveyor belts can be optionally fitted with one or more additional emergency stop switches.

The emergency stop switches are connected in series between the power source and the motor, so that activating any switch stops the whole conveyor system immediately.



Fig. 14: Frequency converter

Conveyor systems which are ready to connect and which have an adjustable conveyor speed are equipped with a frequency converter.

For motors up to 250 Watt power, the GB-FU 250 unit is used. For motors from 250 to 370 Watt, the GB-FU 370 unit is used. Motors with a power greater than 370 Watt are provided with a frequency converter specially matched to the motor.

Every frequency converter also has the function of protecting the motor from overload. This means that damage to the motor is impossible if the conveyor belt is blocked for mechanical reasons. In this case the converter switches the power off.

Frequency converters should be connected to a 230 V ~ / 50 Hz supply.

Converters have separate operating instructions provided with every delivery.

The converter has an emergency stop switch to stop the conveyor belt quickly in case of danger.

The frequency converter has a restart lock if the voltage falls, i.e. if the power is cut off and reconnected, the conveyor belt will not start on its own. A separate start button must be pressed.



ATTENTION!

Damage if the frequency converter is incorrectly programmed!

Incorrect programming of the frequency converter can result in damage.

Therefore:

- The programming may be changed only by trained personnel and after contacting the manufacturer.

Content

5 Transport, packing and storage

5.1 Safety notes for transport

Improper transport



CAUTION!

Improper transport can result in damage!

Improper transport can cause extensive material damage.

Therefore:

- When unloading the packing units upon delivery and during in-house transport, exercise caution and observe the symbols on the package.
- Use only the provided attachment points.
- Do not remove packaging material until units are ready for assembly.

Eccentric Center of Gravity



WARNING!

Danger of falling due to eccentric center of gravity!

Packing crates can have an eccentric center of gravity. The wrong kind sling gear attachment can tilt the packing crate and cause life-threatening injuries.

Consequently:

- Comply with the instructions marked on packing crates.
- Attach the crane hook in such a manner that it is over the center of gravity.
- Lift carefully and observe if the load tips. If required change the position of the sling gear.

Suspended Loads



WARNING!

Life-threatening hazard due to suspended loads!

When lifting loads a life-threatening hazard is posed by falling loads or swinging parts.

Consequently:

- Never position yourself under a suspended load!
- Heed the instructions concerning the intended lifting points.
- Do not attach to projecting machine components or to the eyes of attached components; ensure that the sling gear is securely seated.
- Only use approved lifting gear and slings with sufficient bearing capacity.
- Do not use frayed or scored rope or belts.
- Do not lay ropes and belts on sharp edges and corners, do not knot or twist ropes and belts.

5.2 Transport inspection

Check the delivery immediately on receipt for completeness and transport damage.

If externally detectable transport damage is found, proceed as follows:

- Do not accept the delivery, or only with reservation.
- Record the extent of transport damage in the transport documents or on the delivery note of the forwarding agent.
- Start complaints procedure.



NOTE!

*Claim any damage as soon as it is detected.
Compensation claims can only be submitted within
the applicable complaints periods.*

Content

5.3 Packing

Concerning packaging

The individual packages have been packed to match the transport conditions that can be expected. Only environmentally friendly materials were used for packing.

The packaging has the function of protecting the individual components against damage, corrosion, etc., until they are finally assembled. The packaging material must therefore not be damaged and should only be removed just before assembly is to take place.

Handling packaging materials

If there is no returns agreement for the packaging, separate materials according to type and size and direct to further use or recycling.

5.4 Transport

Transport of pallets by forklift truck

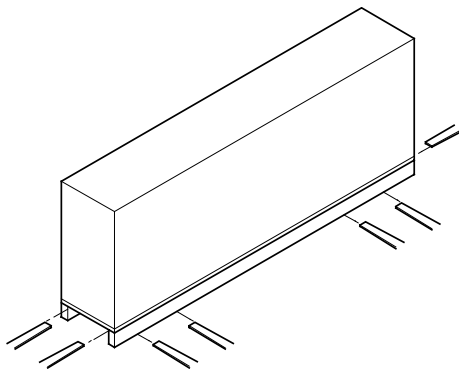


Fig. 15

Packages on pallets can be transported by forklift truck under the following conditions:

- The forklift truck must match the weight of the transport units.
- The operator must have authorization for operating the forklift truck.

Picking up:

1. Insert the forks of the forklift truck between or under the pallet beams.
2. Insert the forks until they appear on the opposite side.
3. Make sure that pallets with eccentric centre of gravity will not tip over.
4. Lift the package and start transport.

Storage of packages

Store packages under the following conditions:

- Do not store outdoors.
- Store in a dry and dust-free environment.
- Do not subject to aggressive media.
- Protect against direct sunlight.
- Avoid mechanical vibrations.
- Storage temperature: 15 to 35 °C
- Relative air humidity: max. 60%
- For storage periods longer than 3 months check the general condition of all parts and packaging regularly. If necessary refresh or renew the conservation.



NOTE!

Packages may be marked with notes for storage, which may exceed the requirements mentioned here. These must be adhered to.

Content

6 Installation and commissioning

6.1 Safety

Fundamentals



WARNING!

Danger of injury due to improper installation and commissioning!

Improper installation and commissioning can result in severe personal injury or material damage.

Therefore:

- Prior to beginning installation, ensure that there is sufficient space to work.
- Handle open sharp-edged components with care.
- Make sure that the assembly location is clean and well organized. Components that are loosely stacked or lying around can cause accidents.
- Assemble components properly. Comply with specified screw tightening torques.
- Secure components so that they cannot fall or tip over.

Personnel

- Installation and commissioning may be executed only by specially trained personnel.
- All work on the electrical system must be performed by a qualified electrician.

Personal protective equipment

Wear the following protective equipment for all work during installation and commissioning:

- Protective work clothing
- Safety shoes
- Protective gloves
- Hairnet

Electrical system



DANGER!

Danger due to electric current!

A life-threatening hazard exists if there is contact with live components. Switched on electrical components can execute uncontrolled movements and cause the most serious injuries.

Consequently:

- Prior to starting work switch off the power supply and safeguard it from being switched on again.

Content

6.2 Installation

6.2.1 Installation

Preparations

Before starting the installation check for:

- Level and stable floor conditions at the installation site.
- Compliance with environmental requirements for the equipment.
- Sufficient space.
- Sufficient lighting.
- Agreement between local power supply and the specifications in the technical data.
- Compliance with the locally applicable safety regulations.
- Availability and correct state of all necessary tools.
- Availability of all necessary documents.



WARNING!

Danger that the equipment may topple!

When conveying heavy goods, the whole conveyor system may topple and cause severe injuries.

Therefore:

- Stands intended to be bolted to the floor must be anchored to the floor.
- Install stands as close as possible to the end of the belt.
- Apply brakes on movable stands.
- Observe the maximum weight for piece goods.

Necessary tools



Fig. 16: Necessary tools

The following tools are needed for the installation:

- Allen key 3 mm
- Allen key 5 mm
- External hexagonal spanner 10 mm
- Crosshead screwdriver

Installing aluminium double stands

Aluminium double stands are supplied separately.

They must be mounted using the holding plates on the frame.

They can be infinitely adjusted at angles between $+30^\circ$ and -30° .

Alternatively, holding plates are available with a tilting range between 0° to $+90^\circ$.

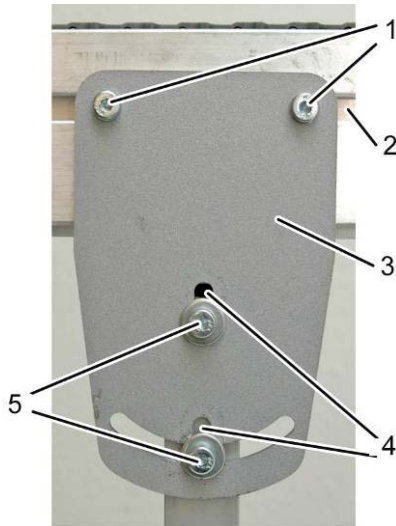


Fig. 17: Installing double stands

Fitting aluminium double stands to the frame:

1. Bring the threaded inserts in the frame (2) into the right position.
2. Fix the double stand with two bolts (1) each on either side of the frame directly adjacent to the drive/return rollers using an Allen key (5 mm).
3. In the vertical position, engage the stand in the middle guide groove (4).
4. Tighten bolts (5).

If the conveyor is required to be at an angle:

5. Loosen the bolts (5) on either side of the stand.
6. Release the stand from the middle guide groove (4).
7. Set the required angle.
8. Tighten the bolts (5) on either side of the stand.



ATTENTION!

The angle must be set such that the conveyed goods cannot slip on the conveyor belt.

Content

Adjusting the height of the aluminium double stand.

The height of the aluminium stand is infinitely variable. As standard, an adjustment range of 200 mm is possible.

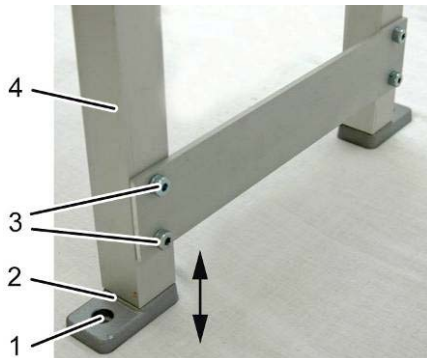


Fig. 18: Adjusting the height of the double stand.

1. Loosen bolts (3) with an Allen key (5 mm).
2. Protect the conveyor system against unintended lowering.
3. Pull out or push in the stand inserts (2) from the exterior stand column (4).
4. Tighten the bolts.
5. Anchor the stands to the floor (1).



ATTENTION!

The height adjustment of the stands must be such that they result in ergonomically appropriate working conditions for the operators of the transport system.

Installing steel double stands

Steel double stands are supplied separately.

They must be fitted to the frame with the holding plates (see "Fitting aluminium double stand").

Adjusting the height of the steel double stand.

The height of the steel double stand is infinitely variable. As standard, an adjustment range of 200 mm is possible.

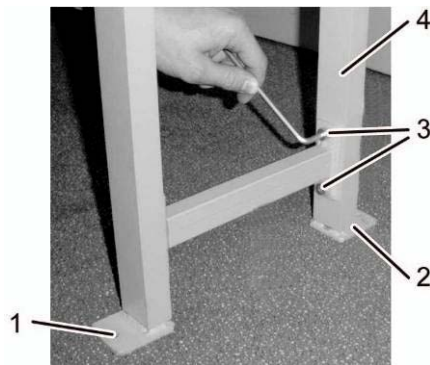


Fig. 19: Adjusting the height of the double stand.

1. Loosen bolts (3) with an Allen key (5 mm).
2. Protect the conveyor system against unintended lowering.
3. Pull out or push in the stand inserts (2) from the exterior stand column (4).
4. Tighten the bolts.
5. Anchor the stands to the floor (1).



ATTENTION!

The height adjustment of the stands must be such that they result in ergonomically appropriate working conditions for the operators of the transport system.

Installing stainless steel double stands

Stainless steel double stands are supplied separately.

They must be fitted to the frame with the holding plates (see "Fitting aluminium double stand").

Adjusting the height of the stainless steel double stand.

Stainless steel double stands can be adjusted in the same way as steel double stands.

(See "Adjusting the height of the steel double stand".)

Content

Fitting steel support stands using an aluminium base plate

Steel support stands with aluminium base plate are supplied separately.

They must be fitted to the frame with the holding plates (see "Fitting aluminium double stand").

Adjusting the height of the steel support stand with aluminium base plate

The height of the steel support stand with aluminium base plate is infinitely variable. As standard, an adjustment range of 200 mm is possible.

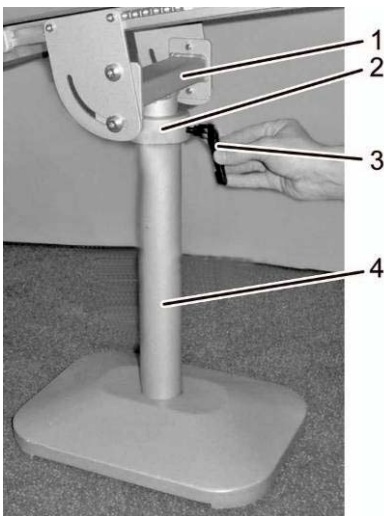


Fig. 20: Adjusting the height on the support stand.

1. Loosen fixing bolt (3) on the adjusting ring (2).
2. Protect the conveyor system against unintended lowering.
3. Pull out or push in the stand fork (1) from the stand foot (4).
4. Tighten the holding bolt.



ATTENTION!

The height adjustment of the stands must be such that they result in ergonomically appropriate working conditions for the operators of the transport system.

Fitting steel H-support stands

The steel H-support stands are supplied separately.

They must be fitted to the frame with the holding plates (see "Fitting aluminium double stand").

Adjusting the height of the steel H-support stand

The steel H-support stand can be adjusted in the same way as the steel support stand with aluminium base plate.

(See "Adjusting the height of the steel support stand with aluminium base plate".)

Installing movable steel H-support stand on wheels

The movable steel H-support stand on wheels is supplied separately.

They must be fitted to the frame with the holding plates (see "Fitting aluminium double stand").

The stand is fitted with Total-Stop safety wheels, which can be secured against unintended motion by activating the brake.



Fig. 21: Movable steel H-support stand on wheels

1. Fit the stand to the frame as described above.
2. Apply the brakes.



WARNING!

Danger that the equipment may topple!

Stands with wheels are more liable to topple than stands without wheels, and can cause severe injuries if they topple.

Therefore:

- Apply all brakes during operation.
- When moving the equipment to other operating locations via ramps or slopes, take additional precautions.

Adjusting the height of the movable steel H-support stand on wheels

The movable steel H-support stands on wheels can be adjusted in the same way as the steel H-support stand.

(See "Adjusting the height of the steel support stand with aluminium base plate".)

Fitting stainless steel H-support stands

The stainless steel H-support stands are supplied separately.

They must be fitted to the frame with the holding plates (see "Fitting aluminium double stand").

Content

Adjusting the height on the stainless steel H-support stand

The stainless steel H-support stand can be adjusted in the same way as the steel H-support stand.

(See "Adjusting the height of the steel support stand with aluminium base plate".)

Installing movable stainless steel H-support stand on wheels

The movable stainless steel H-support stand on wheels is supplied separately.

They must be fitted to the frame with the holding plates (see "Fitting aluminium double stand").

Adjusting the height of the movable stainless steel H-support stand on wheels

The movable stainless steel H-support stands on wheels can be adjusted in the same way as the steel H-support stand on wheels.

(See "Adjusting the height of the steel support stand with aluminium base plate".)

Adjusting the drive chain

The drive chain has already been adjusted to the required play by the manufacturer. If necessary, re-adjust as follows:

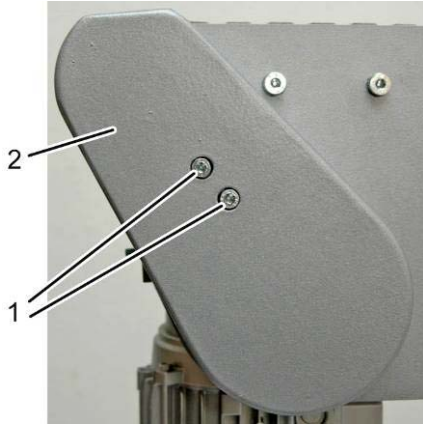


Fig. 22: Remove the chain box

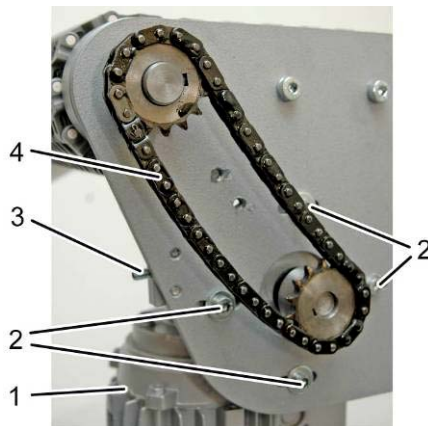
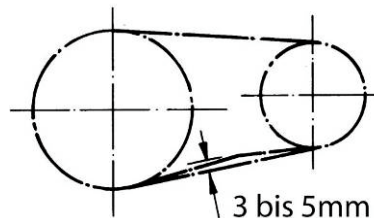


Fig. 23: Adjusting the drive chain

1. Loosen bolts (1) with an Allen key (5 mm).
2. Remove chain box (2).

3. Slightly loosen bolts (2) with an Allen key (5 mm).
4. By turning the adjustment bolt (3) with an Allen key (3 mm), move the motor (1) and adjust the play of the chain (4) (see drawing):



5. Tighten bolts (2).
6. Replace chain box and screw it fast.



ATTENTION!

The drive chain must be lightly greased at all times.

Content

Adjustment of clutch

When attaching the motor sideways next to the conveyor belt, the clutch must be correctly adjusted.

The clutch has already been adjusted by the manufacturer. If necessary, re-adjust as follows:



ATTENTION!

The separation between the clutch cogwheels must be about 15 mm.

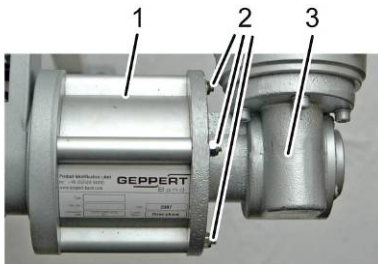


Fig. 24: Clutch removal

1. Loosen fixing bolts (2) with a hexagonal spanner (10 mm).
2. Unscrew the motor flange (3) from the clutch housing (1).
3. Remove the clutch housing.
4. Remove the inside clutch sleeve from the cogwheel.

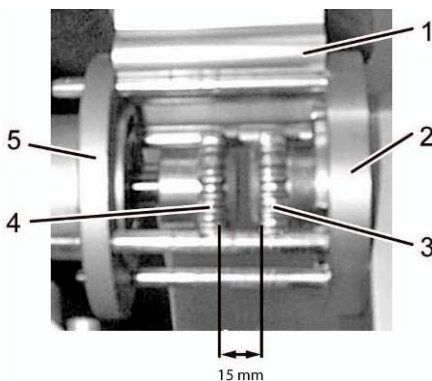


Fig. 25: Separations of the cogwheels

5. Hold the clutch housing (1) between the motor flange (5) and the roller flange (2).
6. Measure the separation between clutch cogwheels (3 and 4).
7. If the separation is not correct, loosen the drive cogwheel (4) with an Allen key (3 mm).
8. Push the drive cogwheel along the shaft.
9. Tighten the drive cogwheel.
10. Push the clutch sleeve onto the clutch cogwheel (3).
11. Replace the clutch housing.
12. Screw motor flange with clutch housing onto the roller flange.
13. Tighten the fixing bolts.

Adjusting the conveyor belt

The conveyor belt has already been adjusted to the required sag by the manufacturer. If necessary, re-adjust as follows:

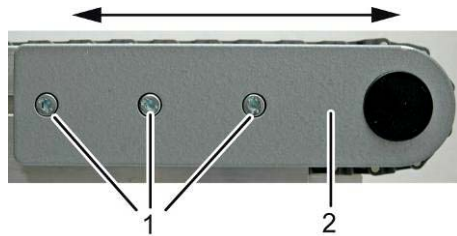


Fig. 26: Adjusting the sag of the conveyor belt

1. Loosen bolts (1) on either side of the return roller holder (2) with an Allen key (5 mm).
2. Slide the reverse roller holder and adjust the required sag of the conveyor belt.
3. Tighten the bolts on either side of the return roller holder.



ATTENTION!

The sag of the belt must be more than 20 mm below the drive roller. In general: The longer the conveyor belt, the greater the sag. A re-adjustment may be necessary if the temperature changes.

Content

6.2.2 Connection

Important



DANGER!

Danger to life from electric current!

Danger to life can result from incorrect connection!

Therefore:

- All work on electrical components and on connections must be carried out only by trained electricians.

If the equipment has not been provided ready to connect, the operator must install the following electric components on the conveyor system:

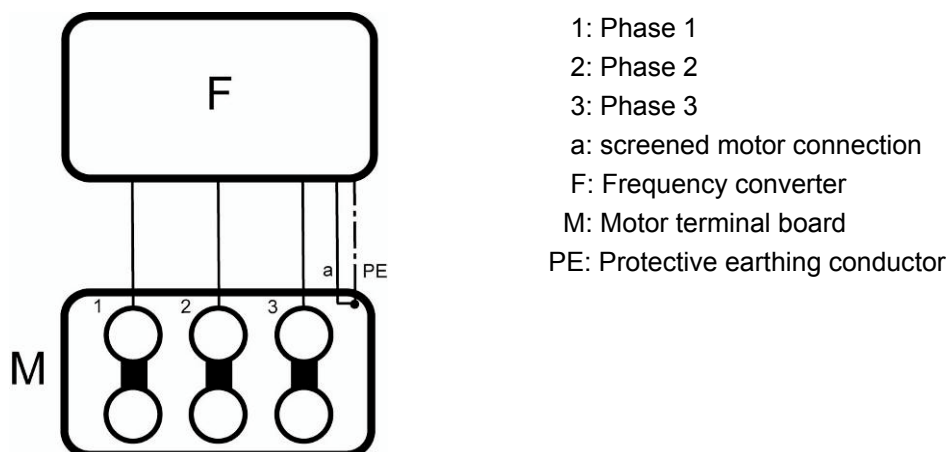


Fig. 27: Connect frequency converter to the motor

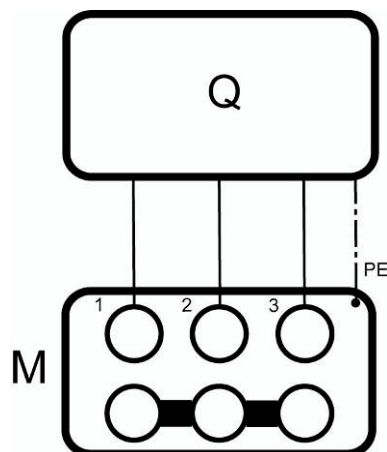


Fig. 28: Connect motor protection switch to the motor

- 1: Phase 1
- 2: Phase 2
- 3: Phase 3
- M: Motor terminal board
- PE: Protective earthing conductor
- Q: Motor protection switch

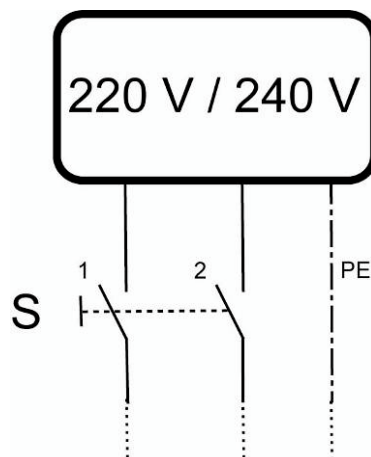


Fig. 29: Connect emergency stop switch to 230 V / 50 Hz

- 1: Phase 1
- 2: Phase 2
- PE: Protective earthing conductor
- S: Emergency stop switch

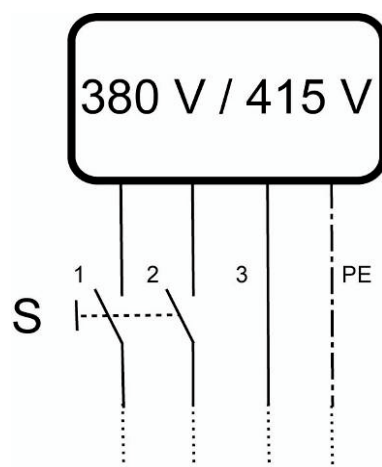


Fig. 30: Connect emergency stop switch to 380 V / 50 Hz

- 1: Phase 1
- 2: Phase 2
- 3: Phase 3
- PE: Protective earthing conductor
- S: Emergency stop switch

Content

6.3 Commissioning

Important



WARNING!

Danger if commissioned incorrectly!

Commissioning requires trained specialist personnel.

Errors in commissioning can result in dangerous situations or cause significant material damage.

Therefore:

- Carry out all commissioning work exclusively with the operator's employees or those acting under his instructions.
- Also for subsequent conversion, re-installation, and recommissioning, engage the operator or those acting under his instructions to do the work.

Commissioning



ATTENTION!

Conveyor belt running in wrong direction!

Incorrect direction of the conveyor belt can result in damage.

Therefore:

- Make sure that the conveyor belt "pulls" (conveyor belt transports towards drive).
1. Briefly switch on the conveyor belt.
 2. Check the direction of the conveyor belt, and correct if necessary (change terminals of two phases).
 3. Check for correct functioning (e.g.: quiet running, vibration).
 4. Check safety devices (e.g.: emergency stop).

7 Operation

Important



WARNING!

Danger of injury through incorrect use!

Incorrect use can cause serious personal or material damage.

Therefore:

- Carry out all operating steps as per the details in these operating instructions.
- Before starting work, ensure that all covers and safety devices are installed and that they work correctly.
- Never disable safety devices during operation.
- Wear personal protective equipment.

Use as a component of a conveying system

When used as a component of a conveying system, there is no direct operation of the equipment at all.

Use as a single piece of equipment

When used as a single piece of equipment, it is switched on and off at the motor protection switch or at the frequency converter.

The conveyor speed is adjusted at the frequency converter.

Content

Conveyor belt and return rollers



WARNING!

Danger of crushing and trapping from moving conveyor belt and rotating return rollers.

A moving conveyor belt and rotating return rollers can draw in parts of clothing and long hair, or trap body parts and cause light to heavy injuries.

Therefore:

- Do not reach into moving conveyor belts.
- Do not reach into rotating return rollers.
- Do not reach into gaps between conveyor belts, frames, and other parts of the equipment.
- Wear personal protective equipment.

7.1 Shut-down in events of emergency

In dangerous situations machine movements must be stopped and the power supply switched off as quickly as possible.

Shut-down in events of emergency

In dangerous situations proceed as follows:

1. Use the nearest emergency stop switch to trigger an emergency stop.
2. Inform responsible persons at the place of action.
3. Call for medical help and fire brigade.
4. Rescue persons from the danger zone, apply First Aid measures.
5. Switch off the main switch and secure against switching on again.
6. Keep access ways clear for rescue vehicles.
7. Inform the responsible authorities, if required by the severity of the incident.
8. Deploy expert personnel to rectify the fault.

After rescue measures



WARNING!

Danger to life caused by too early switching on again!

Danger to life for all persons in the danger zone when switching the machine back on.

Therefore:

- Before switching on again make sure that no persons are inside the danger zone.

9. Check the machine and ensure that all safety features have been installed and are fully functional before restarting the machine.

Content

8 Maintenance

Possible causes for faults and ways to correct them are described in this section.

For faults which cannot be corrected using the following instructions, contact the manufacturer; see service address on page 2.

8.1 Safety

Personnel

- The troubleshooting procedures described here can be performed by the operator unless otherwise marked.
- Some work may be performed only by specially trained personnel or only by the manufacturer, in which case special notice is given in the description of the individual faults.
- All work on the electrical system must be performed by a qualified electrician.

Important



WARNING!

Danger of injury if faults are not corrected in the proper way!

Improper fault correction can cause serious personal or material damage.

Therefore:

- Before starting, ensure that there is sufficient room to carry out the work.
- Make sure the installation area is clean and tidy! Loose components and tools lying around or on top of each other are sources of accidents.
- If components were removed, check for correct refitting, and reinstall all fastening elements.
- Wear personal protective equipment.

Electrical System



DANGER

Electrocution hazard!

An electrocution hazard is posed by contact with live components. Switched on electrical components can execute uncontrolled movements and cause serious injuries.

Consequently:

- Prior to starting work, switch off the supply of electricity and ensure that it cannot be switched on again.

In case of faults:

The following general rules apply:

1. In the event of faults that pose immediate danger to man or machine, activate the emergency shutoff function immediately.
2. Determine cause of fault.
3. If elimination of the fault requires working in the danger zone, switch off unit and secure against being switched on again.
4. Immediately inform the person in charge at the equipment location of the fault.
5. Depending on the type of fault, eliminate the fault or have it eliminated by an authorized specialist.



NOTE!

The troubleshooting chart below provides information on who is authorized to eliminate the fault.

Content

8.2 Trouble shooting chart

Fault	Possible cause	Corrective action	Correction by
Conveyor belt does not run	No power supply	Check power supply and electrical components	Trained electrician
	Motor protection switch tripped	Reset motor protection switch	Operator
	Emergency stop switch activated	Deactivate emergency stop switch	Operator
	Frequency converter triggered	Reset frequency converter	Operator
Conveyor belt runs "jerkily"	Conveyor belt damaged	Replace defective links	Specialist
	Conveyor belt sag incorrectly adjusted	Correct conveyor belt sag (see section "Installation")	Specialist
Drive motor runs but conveyor belt does not move.	Broken drive chain.	Replace drive chain and adjust play (see section "Installation")	Specialist
	Clutch incorrectly adjusted	Correct the clutch adjustment (see section "Installation")	Specialist
	Conveyor belt overloaded	Reduce load	Operator
Conveyed goods slip on conveyor belt	Slope is too steep	Correct the slope (see section "Installation")	Specialist

8.3 Startup after eliminating fault

After remedying the fault, the following steps should be taken to re-start the system:

1. Reset the Emergency Off devices.
2. Acknowledge the fault at the control unit.
3. Ensure that no one is in the danger zone.
4. Start up in accordance with the instructions in the "Operating" chapter.

8.4 Servicing

The equipment does not require servicing.

The transport belt must be cleaned at regular intervals according to its use.

9 Replacement Part List



WARNING!

Danger of injury through incorrect replacement parts!

Wrong or defective replacement parts can cause damage, malfunctioning, or a complete breakdown, as well as reducing safety.

Therefore:

- Use only the manufacturer's original parts.

Obtain replacement parts from a contracted agent or directly from the manufacturer. For address, see page 2.

Part no.:	Description	AM-F	AM-F, sideways	AM-C	AM-C, sideways
901a	Frame, right	1	1	1	1
901b	Frame, left	1	1	1	1
901c	Frame, drive side	-	-	1	1
901d	Frame, return side	-	-	1	1
902	Return head piece	4	4	4	4
903	Motor plate	1	-	1	-
905a	Sliding track, lower run	2	2	1	1
905b	Sliding track, upper run	2	2	1	1
905c	Sliding track, curve, outer	-	-	2	2
906	Drive shaft	1	1	1	1
907	Return shaft	1	1	1	1
908	Cogwheel	x	x	x	x
909	Clutch flange	-	1	-	1
406	Clutch tube	-	1	-	1
-	Clutch	-	1	-	-
910	Frame connection plate	-	-	4	4
911	Spacer	-	-	4	4
912	Cross-piece	x	x	x	x

Content

Part no.:	Description	AM-F	AM-F, sideways	AM-C	AM-C, sideways
913	Middle sliding track	x	x	x	x
914	-	-	-	-	1
915	Adjusting ring	4	4	4	4
916	Adjusting ring with groove	-	-	-	-
27	Chain box	1	-	1	-
440	Motor ring SN3F	1	-	1	-
-	Duplex chain	1	-	1	-
-	Duplex chain wheel	2	-	2	-
-	3-phase drive motor SN3F	1	1	1	1
-	Plastic link belt	1	1	1	1

x = quantity varies according to width of conveyor belt.

10 Appendix

10.1 Drive motors

10.1.1 Type SN3F

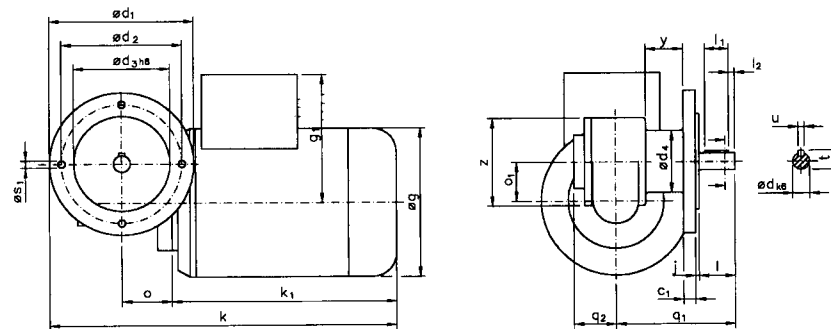


Fig. 31: Drive motor type SN3F

Fastening dimensions

c_1	$\varnothing d_1$	$\varnothing d_2$	$\varnothing d_3$	$\varnothing d_4$	j	$\varnothing s_1$
10	120	100	80	52	3	M6

Spatial dimensions

g	g_1	k	k_1	o	o_1	q	q_1	y	z
125	108	288,5	187	41,5	33	99	35	30	74

Shaft dimensions

$\varnothing d$	l	l_1	l_2	t	u
14	30	20	5	16	5

Drive data

Motor data

Power: 180 W, speed: 1400 rpm, weight: 6.1 kg, current requirement: 0.7 A at 380 V, protection type: IP54

Gear reduction

7:1	10:1	15:1	20:1	30:1	56:1
-----	------	------	------	------	------

Drive speed [rpm]

200	140	93	70	47	25
-----	-----	----	----	----	----

Effective torque [Nm]

6,7	10	12	12	14	17
-----	----	----	----	----	----

Max. permitted torque [Nm]

12	12	13	13	13	10
----	----	----	----	----	----

Content

10.1.2 Type SN8F

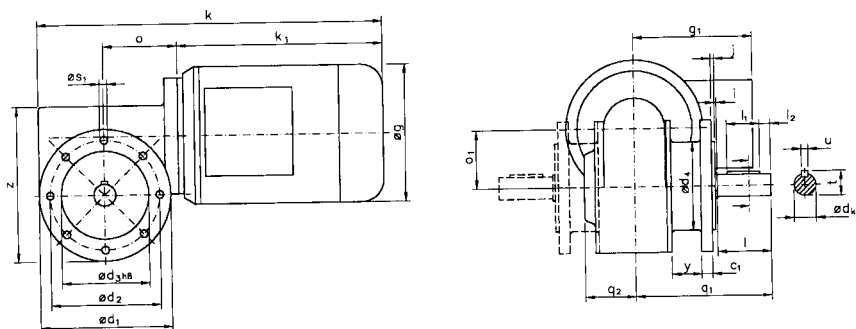


Fig. 32: Drive motor type SN8F

Fastening dimensions

c_1	$\varnothing d_1$	$\varnothing d_2$	$\varnothing d_3$	$\varnothing d_4$	j	$\varnothing s_1$
10	120	100	80	52	3	7

Spatial dimensions

g	g_1	k	k_1	o	o_1	q	q_1	y	z
140	114	334	207	67	53	124	46	25	141

Shaft dimensions

$\varnothing d$	i	l	l_1	l_2	t	u
20	1	50	30	10	22,5	6

Drive data

Motor data

Power: 550 W, speed: 1400 rpm, weight: 10.7 kg, current requirement: 1.6 A at 380 V, protection type: IP54

Gear reduction

7:1 10:1 15:1 21:1 30:1 50:1

Drive speed [rpm]

210 145 93 67 47 28

Effective torque [Nm]

21 28 41 50 56 60

Max. permitted torque [Nm]

56 57 60 57 59 51

10.1.3 Type SN9F

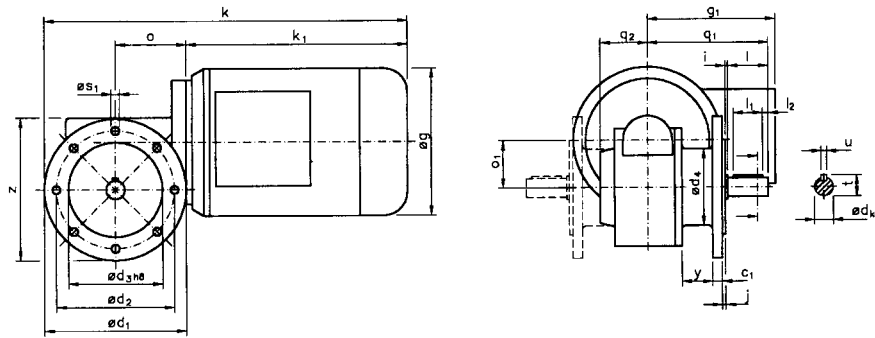


Fig. 33: Drive motor type SN9F

Fastening dimensions							
c_1	$\varnothing d_1$	$\varnothing d_2$	$\varnothing d_3$	$\varnothing d_4$	j	$\varnothing s_1$	
8	120	100	80	65	3	7	

Spatial dimensions									
g	g_1	k	k_1	o	o_1	q	q_1	y	z
140	114	327	207	60	40	102	40	25	121

Shaft dimensions							
$\varnothing d$	i	l	l_1	l_2	t	u	
16	1	35	25	5	18	5	

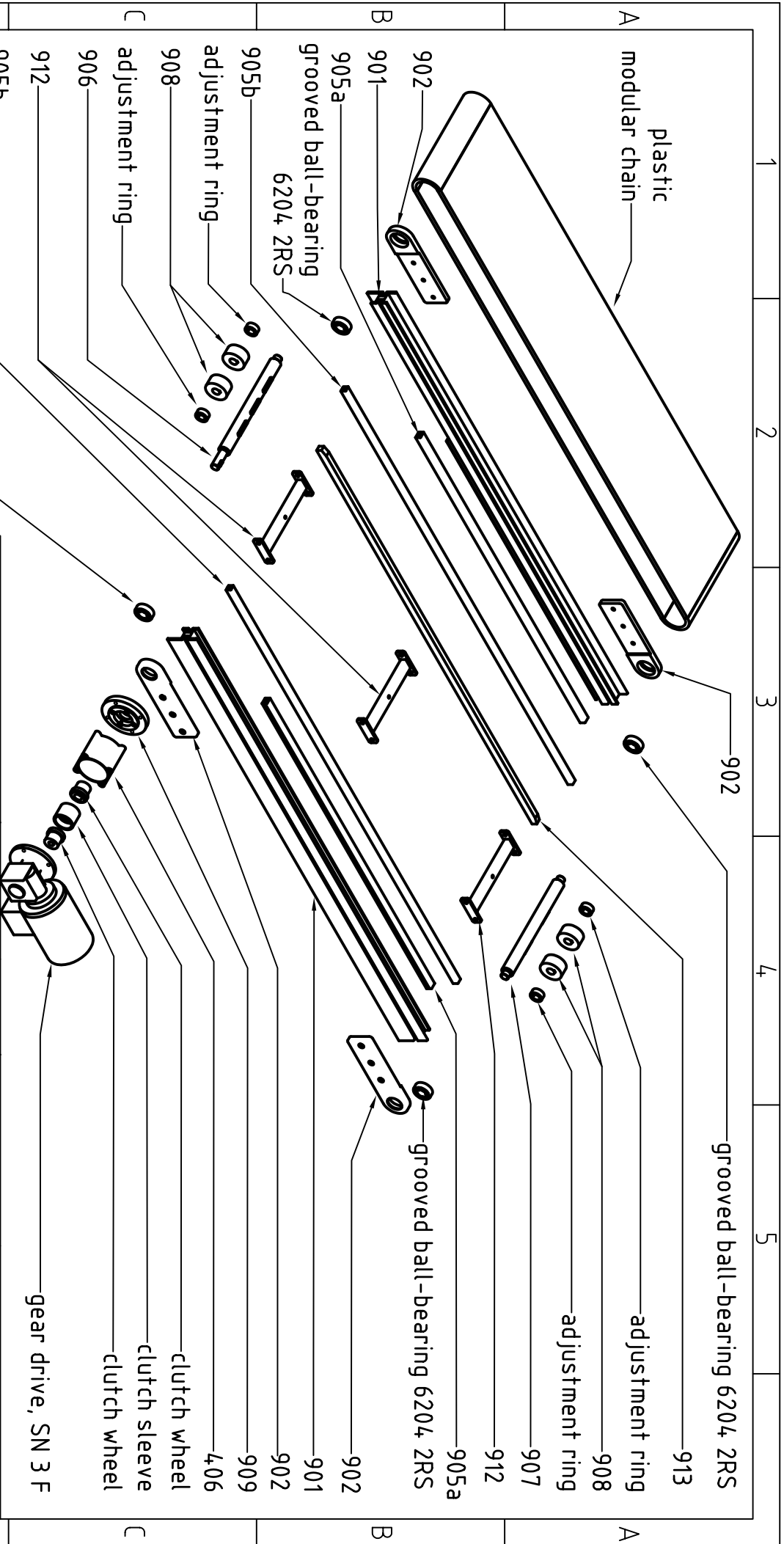
Drive data						
Motor data		Power: 370 W, speed: 1400 rpm, weight: 9.2 kg, current requirement: 1.2 A at 380 V, protection type: IP54				
Gear reduction		7:1	10:1	15:1	20:1	30:1 50:1
Drive speed [rpm]		207	140	93	70	47 28
Effective torque [Nm]		14	20	27	29	36 48
Max. permitted torque [Nm]		30	30	28	29	30 27

Index

11 Index

A		H	
Appendix	58	Hairnet.....	15
Assemblies.....	26	I	
B		Installation	35
Brief description	26	Installation	35
C		L	
Commissioning	48	Labels.....	20
Connection.....	46	Liability	8
Connection values	22	M	
Contact.....	9	Maintenance.....	52
Conveyor belt.....	17, 50	Manufacturer's declaration.....	9
Conveyor belt dimensions	21	O	
Conveyor speeds	21	Operating conditions	22
Copyright.....	9	Operating Instructions	5
Customer	10	Operating personnel	12
Customer Service	9	Operation	49
D		Overview	25
Dangers	16	P	
Declaration of conformity	9	Packing	29, 31
Dimension diagram	24	Personal protective gear	15
Dismantling	8	Personnel	12
Disposal	8	commissioning.....	33, 52
Drive motors.....	58	installation.....	33, 52
Drive unit.....	26	Professional electrician	12
E		Protective clothing.....	15
Electric Current	16	Protective equipment	
Electrical components.....	27	installation.....	33
Emergency Stop	51	Protective gloves.....	15

Purpose of use	14	in this manual	6
Q		Symbols in the danger area	20
Qualified personnel	12	T	
R		Technical data	21
Replacement part list	56	Transport	29, 31
Replacement parts	56	Forklift truck	31
Return rollers	17, 50	Inspection	30
S		Transported material	17
Safety	10	Trouble shooting chart	54
Safety boots	15	Type plate	23
Safety devices	18	U	
Servicing	54	Use	
Signs	20	as a single piece of equipment	49
Storage	29, 32	in conveying system	49
Switching on		W	
Securing against	19	Warranty	9
Symbols			



9050		grooved ball-bearing		6204 ZRS	
1		2			
Zust.		Änderungen		Datum	
				Name	
				Dateiname	
				Allgemein- toleranzen DIN 7168-m	
				Oberfläche	
				Maßstab 1:1	
				Position	
				Menge	
				Blatt	
				1	
				Bl	
				11.02.2009	
				AM-F	
				pulling at the side, left	
				Z-Nr.: 1020 A	

